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PATENTED FEB. 18, 1908.

H. D. HAVEN.
PUMPING DEVICE FOR OIL WELLS.

APPLICATION FILED JUNE 21, 1907.

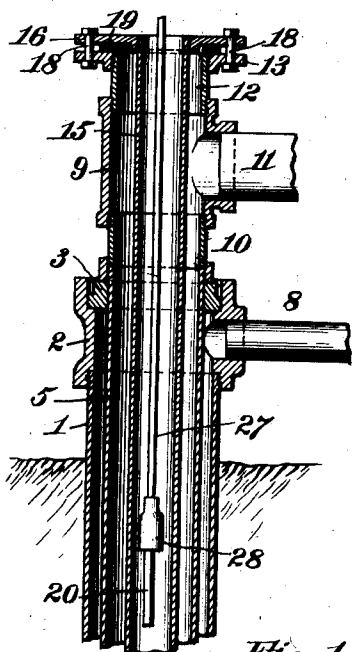


Fig. 1.

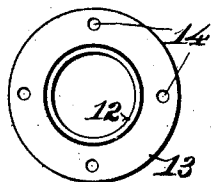


Fig. 2.

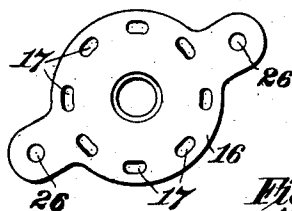


Fig. 3.

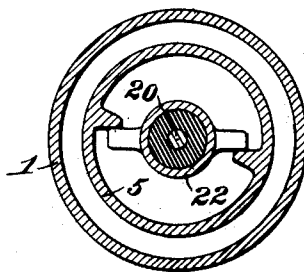
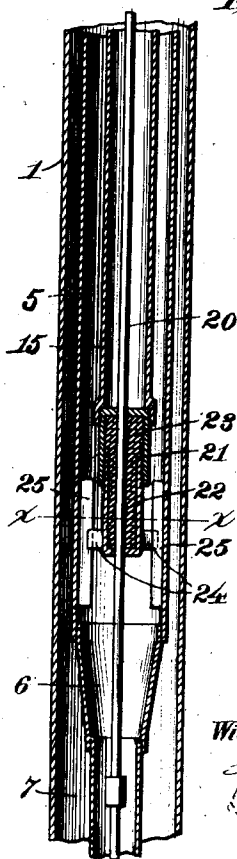


Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY D. HAVEN, OF CHICAGO, ILLINOIS.

PUMPING DEVICE FOR OIL-VELLS.

No. 879,166.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed June 21, 1907. Serial No. 380,042.

To all whom it may concern:

Be it known that I, HENRY D. HAVEN, a citizen of the United States, residing at 5009 Washington avenue, in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Pumping Devices for Oil-Wells, of which the following is a specification.

My invention relates to pumping apparatus for oil wells and has particular reference to the construction and arrangements of the upper end of the casing and parts related thereto.

The object of my invention is to improve the construction of the portion of the pumping apparatus referred to, so as to adapt the same for use with "long stroke" pumping mechanism, such as shown and described in a separate application filed by me, May, 4th, 1907, Serial No., 375,130. In said application I have shown an oscillatory drum about which the operating cable is wound and attach the other end of the cable to the polished rod by a suitable coupling. The length of stroke is measured by the amount of cable unwound and wound about the drum with each oscillation.

It is the usual practice to arrange the stuffing box at the top of the tubing, which is about three feet from the ground. Through this works the polished rod. The polished rod must be somewhat longer than the stroke of the pumping mechanism, hence, said mechanism must be arranged a considerable distance above the ground, especially when long stroke mechanism is used.

A particular object of my invention is to construct and arrange the tubing, stuffing box and related parts of the pumping apparatus, that the actuating mechanism may be located close to the ground.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a sectional view of the upper end of an oil well, illustrating a pumping apparatus embodying my invention. Fig. 2 is a detail plan view of the flange plate, attached to the upper end of the oil tube, Fig. 3 is a similar view of the flange plate attached to the stuffing box tube, and Fig. 4 is a cross section upon an enlarged scale taken on the line, $x-x$ of Fig. 1.

Referring to the drawing, 1 indicates the casing and 2 the casing head, within which is

arranged the casing ring, 3. The tubing depends from the casing ring, 3 and is of but slightly smaller diameter than the casing for a distance approximately the same or a little longer than the length of the stroke of the pumping or actuating mechanism.

5 indicates this portion of the tubing, to the bottom of which is attached a reducing nipple, 6 by which it is coupled to the regular tubing, 7. The gas rises between the casing, 1 and the tubing, 5 and 7, and is carried off by a pipe, 8, leading from the casing head.

9 indicates a tee arranged above and connected to the tubing, 5 by a nipple, 10, and from which leads the oil pipe, 11. A nipple, 12, is arranged at the upper end of the tee, and to this is attached a flange plate, 13, having a plurality of holes, 14, the purpose of which will appear hereinafter.

Arranged concentrically within the part, 5, of the oil tubing, is a tube, 15, which reaches nearly to the nipple, 6. The tube, 15, is supported by a flange plate, 16, which rests upon the flange plate, 13, and closes the top of the oil tubing. The flange plate, 16, is provided with a plurality of holes, 17, and bolts, 18 passing through the holes, 14 and 17 hold the plates, 13 and 16 securely together, and a packing ring, 19 completes a tight joint. Upon the lower end of the tube 15 is arranged the stuffing box, through which passes the polished rod, 20.

The stuffing box comprises two parts, an upper part, 21, fixed to the tube, 15, which shall hereinafter call the stuffing box tube, and a lower part, 22, threaded into the part, 21.

23 indicates packing rings within the stuffing box.

It is frequently necessary to tighten the stuffing box and to the end that the same need not be removed from the well for this purpose, I have recourse to the following novel arrangement. Upon the lower member, 22, of the stuffing box, I provide lugs, or ears, 24, and upon the inner face of the tube, 5, slightly above the nipple, 6, I provide vertically disposed ribs, 25. To tighten the stuffing box the bolts, 18, are removed, after which the flange plate, 16 and the tube, 15, are turned, the flange plate being provided with wrench holes 26 for this purpose. As the tube, 15 is turned, the part 21, of the stuffing box is turned also. However, the lower portion 22 is prevented from turning by the lugs, 24 and ribs, 25.

It will be seen by reference to Fig. 1 that

the ribs, 25 are quite long in comparison with the lugs, 24. These are formed this way so that the stuffing box tube, 15, may vary a little in length without interfering with the operation of the device.

- The stuffing box tube, 15, is made substantially the length of the polished rod, 20, and it is evident that it may be made of any length for pumping mechanism of any stroke.
- 10 The upper end of the polished rod is attached to the cable, 27, by a cable socket, 28, and the cable is connected to the pumping mechanism which may be of a rotatory, oscillatory or reciprocatory type. As the
- 15 upper end of the rod, 20, need not rise above the flange plates, it is evident that the operating mechanism may be placed close to the ground, especially if this is the drum mentioned in the aforesaid prior application.

20 Having described my invention, what I claim as new and desire to secure by Letters Patent is,

1. In a device of the class described, the casing and casing head, in combination with the oil tubing depending from said head, and having an enlarged upper end, a tube of smaller diameter than said enlarged end and depending concentrically therein, and a stuffing box arranged at the lower end of said tube, substantially as described.

2. In a device of the class described, the casing and casing head, in combination with the oil tubing, depending from said head within said casing and having an enlarged upper end, a tee connected to said tubing above said casing head, and a flange plate arranged above said tee, a tube of smaller diameter than said enlarged end, and depending concentrically therein, a flange plate secured to the upper end of said tube, and resting upon the aforementioned flange

plate, and closing the top of said oil tube, and a stuffing box arranged at the lower end of said tube, substantially as described.

3. In a device of the class described, a casing and casing head, in combination with the oil tubing depending from said head, said oil tube comprising an upper section of slightly less diameter than said casing, and a reduced lower portion, a tee arranged at the upper end of said enlarged portion above said casing head, and a flange plate, secured to the upper end thereof, a tube of smaller diameter than the enlarged portion of said tubing and depending concentrically therein, a two part stuffing box, arranged at the lower end of said tube, means for turning said tube and one portion of said stuffing box, and means for holding the other part of said stuffing box against rotation, substantially as and for the purpose described.

4. In a device of the class described, a casing and casing head, in combination with the oil tubing depending from said head, and having an enlarged upper end, a stuffing box tube of smaller diameter than said enlarged end, and depending concentrically therein, a stuffing box arranged at the lower end of said tube, a long stroke polished rod extending through said stuffing box, and an operating cable connected to the upper end of said rod, said stuffing box tube being substantially the same, or of slightly greater length than said rod, substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY D. HAVEN.

Witnesses:

H. S. AUSTIN,
F. E. SHEEHY.